

(12) INTERNATIONAL APPLICATION PUBLISHED UNDER THE PATENT COOPERATION TREATY (PCT)

(19) World Intellectual Property Organization
International Bureau



(43) International Publication Date
20 July 2000 (20.07.2000)

PCT

(10) International Publication Number
WO 00/42072 A3

(51) International Patent Classification⁷: **C07K 16/00**,
A61K 39/395, C12N 15/13, 15/85, 5/10, G01N 33/68,
33/577, C07K 16/22 // 16/28

(21) International Application Number: PCT/US00/00973

(22) International Filing Date: 14 January 2000 (14.01.2000)

(25) Filing Language: English

(26) Publication Language: English

(30) Priority Data:
60/116,023 15 January 1999 (15.01.1999) US

(71) Applicant: GENENTECH, INC. [US/US]; 1 DNA Way,
South San Francisco, CA 94080-4990 (US).

(72) Inventor: PRESTA, Leonard, G.; 1900 Gough Street,
#206, San Francisco, CA 94109 (US).

(74) Agents: LEE, Wendy, M. et al.; Genentech, Inc., 1 DNA
Way, South San Francisco, CA 94080-4990 (US).

(81) Designated States (*national*): AE, AL, AM, AT, AU, AZ,
BA, BB, BG, BR, BY, CA, CH, CN, CR, CU, CZ, DE, DK,
DM, EE, ES, FI, GB, GD, GE, GH, GM, HR, HU, ID, IL,
IN, IS, JP, KE, KG, KP, KR, KZ, LC, LK, LR, LS, LT, LU,
LV, MA, MD, MG, MK, MN, MW, MX, NO, NZ, PL, PT,
RO, RU, SD, SE, SG, SI, SK, SL, TJ, TM, TR, TT, TZ, UA,
UG, UZ, VN, YU, ZA, ZW.

(84) Designated States (*regional*): ARIPO patent (GH, GM,
KE, LS, MW, SD, SL, SZ, TZ, UG, ZW), Eurasian patent
(AM, AZ, BY, KG, KZ, MD, RU, TJ, TM), European patent
(AT, BE, CH, CY, DE, DK, ES, FI, FR, GB, GR, IE, IT, LU,
MC, NL, PT, SE), OAPI patent (BF, BJ, CF, CG, CI, CM,
GA, GN, GW, ML, MR, NE, SN, TD, TG).

Published:

— With international search report.

(88) Date of publication of the international search report:
30 November 2000

For two-letter codes and other abbreviations, refer to the "Guidance Notes on Codes and Abbreviations" appearing at the beginning of each regular issue of the PCT Gazette.



WO 00/42072 A3

(54) Title: POLYPEPTIDE VARIANTS WITH ALTERED EFFECTOR FUNCTION

(57) Abstract: The present invention concerns polypeptides comprising a variant Fc region. More particularly, the present invention concerns Fc region-containing polypeptides that have altered effector function as a consequence of one or more amino acid modifications in the Fc region thereof.

C.(Continuation) DOCUMENTS CONSIDERED TO BE RELEVANT

Category	Citation of document, with indication, where appropriate, of the relevant passages	Relevant to claim No.
X	<p>SARMAY G ET AL: "MAPPING AND COMPARISON OF THE INTERACTION SITES ON THE FC REGION OF IGG RESPONSIBLE FOR TRIGGERING ANTIBODY DEPENDENT CELLULAR CYTOTOXICITY ADCC THROUGH DIFFERENT TYPES OF HUMAN FC-GAMMA RECEPTOR"</p> <p>MOLECULAR IMMUNOLOGY, vol. 29, no. 5, 1992, pages 633-639, XP000915240 ISSN: 0161-5890 abstract figure 3 page 634, right-hand column, paragraphs 3,4 page 637, left-hand column, line 15-18 page 638, left-hand column, paragraph 4 -right-hand column, paragraph 2</p>	<p>1-4, 8-10, 38-42, 44-49</p>
X	<p>WO 98 23289 A (GEN HOSPITAL CORP ;UNIV BRANDEIS (US)) 4 June 1998 (1998-06-04)</p> <p>claims 1-8 example 2</p>	<p>1-4, 8-15, 31-46</p>
X	<p>GHETIE VICTOR ET AL: "Increasing the serum persistence of an IgG fragment by random mutagenesis."</p> <p>NATURE BIOTECHNOLOGY, vol. 15, no. 7, 1997, pages 637-640, XP000876642 ISSN: 1087-0156 abstract page 637, left-hand column, paragraph 3 page 638, left-hand column, paragraph 1 page 639, right-hand column, paragraph 5 figure 2; table 1</p>	<p>1-4, 8-15, 31-46</p>
X	<p>MEDESAN CORNELIU ET AL: "Comparative studies of rat IgG to further delineate the Fc:FcRn interaction site."</p> <p>EUROPEAN JOURNAL OF IMMUNOLOGY, vol. 28, no. 7, July 1998 (1998-07), pages 2092-2100, XP000915239 ISSN: 0014-2980 abstract page 2095, right-hand column, paragraph 2 -page 2096, left-hand column, paragraph 1 page 2096, right-hand column, paragraph 2 -page 2097, column 2 page 2098, right-hand column, paragraph 3 page 2098, right-hand column, paragraph 2 page 3</p>	<p>1-4, 8-15, 31-46</p>

-/--

C.(Continuation) DOCUMENTS CONSIDERED TO BE RELEVANT

Category	Citation of document, with indication, where appropriate, of the relevant passages	Relevant to claim No.
X	<p>DATABASE BIOSIS 'Online! BIOSCIENCES INFORMATION SERVICE, PHILADELPHIA, PA, US; 16 December 1997 (1997-12-16) HENRY ALISTAIR J ET AL: "Participation of the N-terminal region of Cepsilon3 in the binding of human IgE to its high-affinity receptor FepsilonRI." Database accession no. PREV199800070240 XP002142066 abstract & BIOCHEMISTRY, vol. 36, no. 50, 16 December 1997 (1997-12-16), pages 15568-15578, ISSN: 0006-2960</p>	1,2
P,X	<p>WO 99 51642 A (GENENTECH INC) 14 October 1999 (1999-10-14) claims; examples 1-3</p>	1-49

Information on patent family members

International Application No

PCT/US 00/00973

Patent document cited in search report	Publication date	Patent family member(s)	Publication date
US 5624821 A	29-04-1997	AT 94171 T	15-09-1993
		AU 600575 B	16-08-1990
		AU 1480388 A	10-10-1988
		DE 3883899 D	14-10-1993
		DE 3883899 T	31-03-1994
		EP 0307434 A	22-03-1989
		EP 0351410 A	24-01-1990
		WO 8807089 A	22-09-1988
		WO 8807054 A	22-09-1988
		GB 2209757 A,B	24-05-1989
		JP 1502875 T	05-10-1989
		US 5648260 A	15-07-1997
WO 9823289 A	04-06-1998	NONE	
WO 9951642 A	14-10-1999	AU 3369999 A	25-10-1999

INTERNATIONAL SEARCH REPORT

Int l Application No

PCT/US 00/00973

A. CLASSIFICATION OF SUBJECT MATTER

IPC 7 C07K16/00 A61K39/395 C12N15/13 C12N15/85 C12N5/10
 G01N33/68 G01N33/577 C07K16/22 //C07K16/28

According to International Patent Classification (IPC) or to both national classification and IPC

B. FIELDS SEARCHED

Minimum documentation searched (classification system followed by classification symbols)

IPC 7 C07K

Documentation searched other than minimum documentation to the extent that such documents are included in the fields searched

Electronic data base consulted during the international search (name of data base and, where practical, search terms used)

BIOSIS, EPO-Internal, PAJ

C. DOCUMENTS CONSIDERED TO BE RELEVANT

Category	Citation of document, with indication, where appropriate, of the relevant passages	Relevant to claim No.
X	<p>US 5 624 821 A (WINTER GREGORY P ET AL) 29 April 1997 (1997-04-29) column 1, line 44 -column 2, line 61 column 5, line 53-65 column 6, line 38-42 claims</p> <p style="text-align: center;">--- -/--</p>	1-49

☒ Further documents are listed in the continuation of box C.☒ Patent family members are listed in annex.

Special categories of cited documents:

"A" document defining the general state of the art which is not considered to be of particular relevance

"E" earlier document but published on or after the international filing date

"L" document which may throw doubts on priority claim(s) or which is cited to establish the publication date of another citation or other special reason (as specified)

"O" document referring to an oral disclosure, use, exhibition or other means

"P" document published prior to the international filing date but later than the priority date claimed

"T" later document published after the international filing date or priority date and not in conflict with the application but cited to understand the principle or theory underlying the invention

"X" document of particular relevance; the claimed invention cannot be considered novel or cannot be considered to involve an inventive step when the document is taken alone

"Y" document of particular relevance; the claimed invention cannot be considered to involve an inventive step when the document is combined with one or more other such documents, such combination being obvious to a person skilled in the art.

"&" document member of the same patent family

Date of the actual completion of the international search

6 July 2000

Date of mailing of the international search report

25/07/2000

Name and mailing address of the ISA

European Patent Office, P.B. 5818 Patentlaan 2
 NL - 2280 HV Rijswijk
 Tel. (+31-70) 340-2040. Tx. 31 651 epo nl.
 Fax: (+31-70) 340-3016

Authorized officer

Covone, M

THIS PAGE BLANK (USPTO)